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(54) PURIFIED AND CONCENTRATED PRODUCT OF SHOCHU RESIDUE

(57)Abstract:

PURPOSE: To obtain the purified and concentrated product having no malodor, not putrefying and useful as a seasoning, etc., from the residue of shochu (low- class distilled spirit) by distilling the fermentation product of grains or sweet potatoes to separate the shochu, heating the residue, removing solid contents, treating the filtrate with an absorbent, and subsequently concentrating the treated filtrate so as to give a specific Brix degree.

CONSTITUTION: The fermentation product of grains (e.g. barley) and/or sweet potatoes are distilled to separate a shochu. The residues are fed in a stainless tank equipped with a stirrer, heated at 90°C, stirred for 30min, cooled to 50-60°C, and subsequently filtered with a filter press to remove the solid contents. The obtained filtrate is mixed with an absorbent comprising 1wt.% of carbon particles and 0.3wt.% of perlite, stirred at 45-60°C and subsequently filtered with a super carbon filter, etc. The filtrate is concentrated with a horizontal pipe impact flow-down type evaporation concentrator to give a Brix degree of 25-50, thus providing the objective shochu residue purified concentrated product not generating a malodor, not putrefying, having the high contents of proteins and suger, and useful as a feed, fertilizer, seasoning, etc.

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CLAIMS

[Claim(s)]

[Claim 1] cereals and/-- again -- also crawling -- the purification concentrate of the white-distilled-liquor residue obtained by condensing so that Brix degree may be set to 25-50 after removing a solid after heating the residue which distilled the fermentation product of a kind and separated white distilled liquor at 80-95 degrees C, and carrying out adsorbent processing of the obtained liquid.

[Claim 2] cereals and/-- again -- also crawling -- the manufacturing method of the purification concentrate of the white-distilled-liquor residue characterized by condensing so that Brix degree may be set to 25-50 after removing a solid after heating the residue which distilled the fermentation product of a kind and separated white distilled liquor at 80-95 degrees C, and carrying out adsorbent processing of the obtained liquid.

[Claim 3] The seasoning characterized by containing a purification concentrate according to claim 1.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention does not have an offensive odor, is not decomposed, but its content of protein or sugar is high and it relates to the seasoning which contains this in the purification concentrate and its manufacturing method list of white-distilled-liquor residue useful as feed, fertilizer, a seasoning, etc.

[0002]

[Description of the Prior Art] White distilled liquor is typical Japanese distilled liquor, distills the fermentation product which raw materials, such as cereals, potatoes, and alcohol dregs, were fermented, and was obtained with a simplex distillation machine (authentic white distilled liquor) or a continuous distillation machine (new-type white distilled liquor), and is manufactured by acquiring an alcohol content. Having a characteristic offensive odor and gas occur, from it being easy to decompose etc., the remainder which acquired the alcohol content, i.e., bottoms, cannot find out effective directions, but they are discarded. Since the abandonment also has an offensive odor and a rotten problem, the present condition is that cannot perform the usual abandonment but ocean dumping is carried out.

[0003] However, this abandonment means was restricted from viewpoints, such as a public nuisance and environmental destruction, and had problems, such as requiring a large amount of costs.

[0004] Then, bottoms are processed by various approaches and removal and putrefaction prevention of an offensive odor are achieved. Although the evaporation condensing method by the multieffect evaporator was tried as the means, deer concentration could not be carried out until the moisture content became 75 - 80% of the weight, but the approach of starting of removal of an offensive odor and rotten prevention was inadequate. Moreover, although the activated sludge process and methane fermentation using a microorganism are also considered, since it is necessary to process after it cannot process if it remains as it is, since BOD of bottoms is very high, but diluting to 10 or more times, there is a problem in respect of a facility etc. and it has not resulted in utilization. Moreover, by this approach, since the liquid after processing was diluted, it could not be used effectively, but it had the fault that the amount of abandonment also increased.

[0005]

[Problem(s) to be Solved by the Invention] Therefore, the purpose of this invention does not have an offensive odor from white-distilled-liquor residue, and it does not decompose but is in offering the purification concentrate which can be used effectively.

[0006]

[Means for Solving the Problem] As a result of inquiring wholeheartedly that this invention persons should use white-distilled-liquor residue effectively in this actual condition, by condensing until it carries out after [heat-treatment] adsorbent processing at predetermined temperature and becomes a further predetermined sugar content, there is no offensive odor and putrefaction did not start, but since protein and the sugar content are high, it came to complete a header and this invention for feed or not only fertilizer but the purification concentrate which can be used as a seasoning being obtained.

[0007] namely, this invention -- cereals and/-- again -- also crawling -- after removing a solid after heating the residue which distilled the fermentation product of a kind and separated white distilled liquor at 80-95 degrees C, and carrying out adsorbent processing of the obtained liquid, the purification concentrate of the white-distilled-liquor residue obtained by condensing so that Brix degree may be set to 25-50, and its manufacturing method are offered. Moreover, this invention offers like the above the seasoning containing the purification concentrate which were obtained by carrying out.

[0008] the purification concentrate (it abbreviates to the "this invention purification concentrate" below) of the white-distilled-liquor residue of this invention -- cereals and/-- again -- also crawling -- after removing a solid after heating the residue (it abbreviates to "bottoms" hereafter) which distilled the fermentation product of a kind and separated white distilled liquor at 80-95 degrees C, and carrying out adsorbent processing of the obtained liquid, it is manufactured by condensing so that Brix degree may be set to 25-50.

[0009] the bottoms used for this invention -- cereals and/-- again -- also crawling -- the remainder which distilled the fermentation product of a kind and isolated white distilled liquor preparatively -- it is -- authentic white distilled liquor and new-type white distilled liquor -- which bottoms are sufficient. Moreover, as cereals, barley and a side, although corn, rice, etc. are mentioned, especially barley is desirable. The Brix degree (the degree of Brix; sugar content test by the flexion rate meter) of these bottoms is usually 5-10.

[0010] 80-95 degrees C of heating of bottoms are preferably performed at 85-95 degrees C for 10 minutes to 1 hour. There is a possibility that the viable cell which remained at less than 80 degrees C may increase and rot, and since mothball nature is bad, it is not desirable. In addition, it is desirable to perform the heat-treatment concerned to the bottom of stirring.

[0011] Although various means can perform removal of a solid, the method of filtering 70-200 meshes of bottoms under pressurization by the screen of 80-110 meshes especially is simple and efficient, and desirable. Since there is a possibility that you want to pass a screen and may remove to protein etc. when there is a possibility that even a solid to remove may let it pass here if a mesh becomes coarse at less than 70 meshes and it becomes fine exceeding 200 meshes on the other hand, it is not desirable. In addition, it is desirable to cool preferably 60 degrees C or less of bottoms to 50-60 degrees C in advance of filtration.

[0012] Next, the obtained liquid is processed with an adsorbent. Although it will not be restricted as an adsorbent used here especially if it is a porous particle or fine particles, a carbon particle, carbon powder, activated carbon, etc. are desirable. these adsorbents -- 0.1- of liquid -- what is necessary is just to add about 5% of the weight Moreover, if filter aids, such as acid clay and a pearlite, are used together in addition to these adsorbents, the ** exception of an adsorbent becomes easy and is desirable. Processing actuation is performed by carrying out an adsorbent a ** exception, after adding a filter aid according to an adsorbent and the need in liquid, adjusting solution temperature to 40-60 degrees C and stirring about 50 to 120 minutes. The mesh of the filter used for filtration is suitably chosen by the particle size of the adsorbent to be used.

[0013] subsequently, the obtained filtrate -- Brix degree -- 25-50 -- it condenses until it is preferably set to 30-40. In the concentration whose Brix degree is less than 25 extent, putrefaction arises, an offensive odor does not disappear, either and prolonged preservation cannot be performed. As a means of concentration here, the approach of making it flow down the external surface of tubing which had enriched liquid heated from a top to the bottom, evaporating moisture, making the approach of condensing, especially enriched liquid flow down the external surface of a level generating tube from a top to the bottom, evaporating moisture, and condensing is desirable. Extensive processing is possible, without according to this means, the specified substance condensed on the way adhering, since new liquid flows down from a top to the bottom one by one even if concentration advances.

[0014] this invention purification concentration liquid obtained in this way can use protein, amino acid, a saccharide, etc. as a principal component, and can use them as other seasonings, such as feed and fertilizer. Although this can also be independently used for it as a seasoning since this invention purification concentration liquid has the operation which gives a taste to food, it can also be considered

as seasoning pharmaceutical preparation by mixing with other seasonings.

[0015] As other seasonings which can be blended with this invention purification concentration liquid, hydrolyzed vegetable protein, powder amino acid, *****, a hydrolyzed animal protein (HAP), vegetable albumen hydrolyzate (HVP), a dried bonito, a desiccation onion, a desiccation carrot, marine-products extractives, a yeast extract, mirin, Fucus-vesiculosus extractives, soy sauce, salt, an alcoholic beverage, a meat extract, shiitake mushroom, bean paste, fruit extractives, etc. are mentioned. Especially the loadings of this invention purification concentrate have 0.1 - 50 desirable % of the weight 0.1 to 100% of the weight in the seasoning whole quantity.

[0016] Although mixing other seasonings in the above-mentioned purification concentration liquid can also manufacture the seasoning of this invention, it is desirable after mixing to carry out adsorbent processing. Adsorbent processing is performed like the case of the aforementioned purification concentration liquid manufacture here. Moreover, the pharmaceutical form of this invention seasoning may be liquefied, and powder, granularity, etc. are sufficient as it. In addition, when considering as powder and granularity, an excipient can also be added if needed.

[0017]

[Example] Next, although an example is given and this invention is explained to a detail, this invention is not limited to these examples.

[0018] 10kg of white-distilled-liquor waste fluid which is the bottoms which manufactured white distilled liquor by using example 1 barley as a raw material and which has the presentation shown in Table 1 was fed into the stirring equipment addition heat stainless steel tank, it was heated at 90 degrees C, and was stirred for 30 minutes. It cooled until it became 50-60 degrees C, and it filtered with the filter press (a self-dynamic pressure ***** machine, 70 steps, and a filter medium are a filter cloth). 1 % of the weight of carbon particles and 0.3 % of the weight (Mitsui Mining and Smelting Co., Ltd. make) of pearlites were added to filtrate, and after stirring keeping at 45-60 degrees C, it filtered with the super carbon filter (20 steps of three frames, **** 406 m/m). Filtrate was condensed until Brix degree was set to 35 with the Sasakura machine factory bottom type evaporator of a horizontal pipe opposition rapid stream, and 2kg of purification concentration liquid was obtained. Moreover, the presentation of the obtained purification concentration liquid is shown in Table 2.

[0019]

[Table 1]

原料焼酎廃液の組成

B O D (mg/ℓ)	28.000
蒸発残渣 (%)	8.05
灰 分 (%)	1.24
有機物 (%)	6.81
全糖分 (%)	1.93
全窒素 (%)	0.57
pH	3.85
ブリックス度	7.0

[0020]

[Table 2]

精製濃縮液の組成

水	分	72.3%	
蛋	白	質	11.8%
脂	質	0.2%	
纖	維	0%	
灰	分	1.2%	
糖	質	14.5%	
pH		4.09	
ブリックス度		35	

[0021] Even if it saved the obtained purification concentration liquid for a long period of time, stinking thing generating and putrefaction did not produce it at all. On the other hand, some (comparison concentration liquid) which the moisture content condensed to about 50% of the weight after it heated white-distilled-liquor waste fluid before and after 70 degrees C and filtration removed the solid have bitterness and astringency, when they are saved for further one month, they emanate an offensive odor, and they could not use it as a seasoning. Moreover, when this comparison concentration liquid tended to be blended with other seasonings and it was going to filter it, its filterability was bad and preparation of uniform seasoning liquid of it was not completed.

[0022] 10kg (product made from KOSUMO Food) of vegetable albumen hydrolyzates was added to 10kg of purification concentration liquid obtained in the example 2 example 1, the sodium-hydroxide water solution was added to this 30%, and pH was adjusted to 5.5. This was supplied to the stirring equipment addition heat stainless steel tank, 0.5 % of the weight of carbon particles, 0.5 % of the weight of pearliters, and 1.0 % of the weight of acid clay were added, and it stirred for 30 minutes at 60 degrees C. It cooled radiationally until it became 40 degrees C, and it filtered using the multistage type filter, and filtrate was extracted. This filtrate was excellent as a seasoning for giving a taste to food. Furthermore, the powder-like seasoning was obtained when this filtrate was spray-dried. the result of having prepared 1.2% solution of the obtained seasoning and having examined the taste by five persons' panelist -- this invention seasoning -- vegetable albumen hydrolyzate, compared with the case of being independent, the taste was markedly alike and was improving.

[0023]

[Effect of the Invention] The purification concentrate of the white-distilled-liquor residue of this invention is useful as a seasoning for not emanating putrefaction and an offensive odor at all, even if saved for a long period of time, but giving a taste to food.

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最終頁に続く

(54)【発明の名称】 焼酎残渣の精製濃縮物

(57)【要約】

【構成】 穀類及び／又はいも類の発酵生産物を蒸留して焼酎を分離した残渣を80～95℃に加熱した後固形物を除去し、得られた液を吸着剤処理した後ブリックス度が25～50となるように濃縮することにより得られる焼酎残渣の精製濃縮物、及びこれを含む調味料。

【効果】 この焼酎残渣の精製濃縮物は、長期間保存しても何ら腐敗、悪臭を生じず、食品に旨味を付与するための調味料として有用である。

【特許請求の範囲】

【請求項1】 穀類及び／又はいも類の発酵生産物を蒸留して焼酎を分離した残渣を80～95℃に加熱した後固形物を除去し、得られた液を吸着剤処理した後ブリックス度が25～50となるように濃縮することにより得られる焼酎残渣の精製濃縮物。

【請求項2】 穀類及び／又はいも類の発酵生産物を蒸留して焼酎を分離した残渣を80～95℃に加熱した後固形物を除去し、得られた液を吸着剤処理した後ブリックス度が25～50となるように濃縮することを特徴とする焼酎残渣の精製濃縮物の製造法。

【請求項3】 請求項1記載の精製濃縮物を含有することを特徴とする調味料。

【発明の詳細な説明】

【0001】

【産業上の利用分野】本発明は、悪臭がなく腐敗せず、蛋白質や糖の含量が高く、飼料、肥料、調味料等として有用な焼酎残渣の精製濃縮物及びその製造法並びにこれを含む調味料に関する。

【0002】

【従来の技術】焼酎は、日本の代表的な蒸留酒であり、穀類、いも類、酒カス等の原料を発酵させて得られた発酵生産物を単式蒸留機（本格焼酎）又は連続蒸留機（新式焼酎）で蒸留し、アルコール分を取得することにより製造されている。そのアルコール分を取得した残部、すなわち蒸留残渣は特有の悪臭を有すること、ガスが発生し、腐敗しやすいこと等から有効な利用法が見出せず、廃棄されている。その廃棄も、悪臭、腐敗の問題があるため、通常の廃棄ができず、海洋投棄されているのが現状である。

【0003】しかし、かかる廃棄手段は公害、環境破壊等の観点から制限され、また多額の費用を要する等の問題があった。

【0004】そこで、蒸留残渣を種々の方法で処理して、悪臭の除去や腐敗防止が図られている。その手段として多重効用缶による蒸発濃縮法が試みられているが、かかる方法では水分量が75～80重量%になるまでしか濃縮できず、悪臭の除去、腐敗の防止ともに不十分であった。また、微生物を利用した活性汚泥法やメタン発酵法も考えられるが、蒸留残渣のBODが極めて高いためそのままでは処理できず、10倍以上に希釈してから処理する必要があるため、設備面等で問題があり、実用化に至っていない。また、この方法では処理後の液は希釈されているため有効利用できず、廃棄量も増大するという欠点があった。

【0005】

【発明が解決しようとする課題】従って、本発明の目的は焼酎残渣より、悪臭がなく、腐敗せず、有効に利用することのできる精製濃縮物を提供することにある。

【0006】

【課題を解決するための手段】かかる実状において本発明者らは焼酎残渣を有効利用すべく鋭意検討した結果、所定の温度にて加熱処理後吸着剤処理し、さらに所定の糖度になるまで濃縮することにより、悪臭がなく、腐敗がおこらず、蛋白及び糖含量が高いため飼料や肥料だけでなく調味料として利用することのできる精製濃縮物が得られることを見出し、本発明を完成するに至った。

【0007】すなわち、本発明は穀類及び／又はいも類の発酵生産物を蒸留して焼酎を分離した残渣を80～95℃に加熱した後固形物を除去し、得られた液を吸着剤処理した後ブリックス度が25～50となるように濃縮することにより得られる焼酎残渣の精製濃縮物、及びその製造法を提供するものである。また、本発明は上記の如くして得られた精製濃縮物を含有する調味料を提供するものである。

【0008】本発明の焼酎残渣の精製濃縮物（以下「本発明精製濃縮物」と略す）は、穀類及び／又はいも類の発酵生産物を蒸留して焼酎を分離した残渣（以下、「蒸留残渣」と略す）を80～95℃に加熱した後固形物を除去し、得られた液を吸着剤処理した後ブリックス度が25～50になるように濃縮することによって製造される。

【0009】本発明に用いられる蒸留残渣は、穀類及び／又はいも類の発酵生産物を蒸留して焼酎を分取した残部であり、本格焼酎、新式焼酎いずれの蒸留残渣でもよい。また、穀類としては、大麦、そば、とうもろこし、米などが挙げられるが、大麦が特に好ましい。かかる蒸留残渣のブリックス度（Brix度；屈折率計による糖度テスト）は通常5～10である。

【0010】蒸留残渣の加熱は、80～95℃、好ましくは85～95℃で10分～1時間行なう。80℃未満では残存した生菌が増殖して腐敗するおそれがあり、長期保存性が悪いいため、好ましくない。なお、当該加熱処理は攪拌下に行なうのが好ましい。

【0011】固形物の除去は、種々の手段で行ない得るが、蒸留残渣を70～200メッシュ、特に80～110メッシュの篩で加圧下に濾過する方法が簡便かつ効率的であり、好ましい。ここで、篩目が70メッシュ未満に粗くなると、取り除きたい固形物まで通してしまう恐れがあり、一方200メッシュを超えて細くなると篩を通過させたい蛋白質等までも取り除く恐れがあるので好ましくない。なお、濾過に先立って蒸留残渣は60℃以下、好ましくは50～60℃まで冷却しておくのが好ましい。

【0012】次に、得られた液を吸着剤で処理する。ここで用いられる吸着剤としては、多孔質の粒子又は粉体であれば特に制限されないが、カーボン粒子、カーボン粉末、活性炭等が好ましい。これらの吸着剤は液の0.1～5重量%程度添加すればよい。また、これらの吸着剤に加えて酸性白土、バーライト等の濾過助剤を併用す

れば、吸着剤の汙別が容易になり、好ましい。処理操作は、液に吸着剤及び必要により汙過助剤を添加し40～60℃に液温を調整し、50～120分程度攪拌した後、吸着剤を汉別することにより行なわれる。汉過に用いるフィルターの篩目は、用いる吸着剤の粒径により適宜選択される。

【0013】次いで得られた汉液をブリックス度が25～50、好ましくは30～40となるまで濃縮する。ブリックス度が25未満程度の濃縮では腐敗が生じ、悪臭も消失せず、長期間保存ができない。ここで濃縮の手段としては、被濃縮液を加熱された管の外面を上から下へ流下させて水分を蒸発させ、濃縮する方法、特に被濃縮液を水平蒸発管の外面を上から下へ流下させて水分を蒸発させ、濃縮する方法が好ましい。この手段によれば、濃縮が進行しても、順次上から下へ新しい液が流下するため、途中に濃縮した目的物が付着することなく、大量処理が可能である。

【0014】かくして得られる本発明精製濃縮液は、蛋白質、アミノ酸類、糖類等を主成分とし、飼料、肥料等の他調味料として利用することができる。本発明精製濃縮液は、食品に旨味を付与する作用を有するので、これを単独で調味料として用いることもできるが、他の調味料と混合することにより調味料製剤とすることもできる。

【0015】本発明精製濃縮液に配合することのできる他の調味料としては、アミノ酸液、粉末アミノ酸、魚しょう、動物性蛋白質加水分解物(HAP)、植物性蛋白質加水分解物(HVP)、かつおぶし、乾燥たまねぎ、乾燥にんじん、魚介エキス、酵母エキス、みりん、コンブエキス、しょうゆ、食塩、酒類、肉エキス、しいたけ、みそ、果物エキス等が挙げられる。本発明精製濃縮物の配合量は、調味料全量中に0.1～100重量%、特に0.1～50重量%が好ましい。

【0016】本発明の調味料は、上記精製濃縮液に他の調味料を単に混合するだけでも製造できるが、混合後、吸着剤処理することが好ましい。ここで吸着剤処理は、前記の精製濃縮液製造の場合と同様にして行なわれる。また、本発明調味料の剤型は、液状でもよいし、粉末状、顆粒状等でもよい。なお、粉末状、顆粒状とする場合には、必要に応じて賦形剤を添加することもできる。

【0017】

【実施例】次に実施例を挙げて本発明を詳細に説明するが、本発明はこれら実施例に限定されるものではない。

【0018】実施例1

大麦を原料として焼酎を製造した蒸留残渣である、表1に示す組成を有する焼酎廃液10kgを、攪拌装置付加熱ステンレスタンクに投入し、90℃に加熱して30分間攪拌した。50～60℃になるまで冷却し、フィルタープレス(自動汉汉圧搾機、70段、汉過剤は汉布)にて汉過した。汉液にカーボン粒子1重量%及びパーライト

(三井金属鉱業(株)製)0.3重量%を添加し、45～60℃に保ちつつ攪拌した後、スーパーカーボンフィルター(3枠20段、網径406μm)にて汉過した。汉液を笹倉機械製作所製の水平管衝激流下式蒸発濃縮装置によりブリックス度が35になるまで濃縮し、精製濃縮液2kgを得た。また、得られた精製濃縮液の組成を表2に示す。

【0019】

【表1】

原料焼酎廃液の組成

BOD (mg/ℓ)	28.000
蒸発残渣 (%)	8.05
灰 分 (%)	1.24
有機物 (%)	6.81
全糖分 (%)	1.93
全窒素 (%)	0.57
pH	3.85
ブリックス度	7.0

【0020】

【表2】

精製濃縮液の組成

水 分	72.3%
蛋 白 質	11.8%
脂 質	0.2%
纖 維	0%
灰 分	1.2%
糖 質	14.5%
pH	4.09
ブリックス度	35

【0021】得られた精製濃縮液は長期間保存しても何ら臭いの発生、腐敗が生じなかった。これに対し、焼酎廃液を70℃前後に加熱し、汉過により固形物を除去した後水分量が50重量%程度に濃縮したもの(比較濃縮液)は、苦味、渋味があり、さらに1ヶ月保存したところ悪臭を生じ、調味料としては使用し得なかった。また、この比較濃縮液は、他の調味料と配合して汉過しようとしたところ、汉過性が悪く、均一な調味液の調製ができなかった。

【0022】実施例2

実施例1で得られた精製濃縮液10kgに植物性蛋白質加水分解物(コスモ食品(株)製)10kgを加え、これに30%水酸化ナトリウム水溶液を加えてpHを5.5に調整した。これを攪拌装置付加熱ステンレスタンクに投入し、カーボン粒子0.5重量%、パーライト0.5重量%及び酸性白土1.0重量%を加え、60℃で30分間攪拌した。40℃になるまで放冷し、多段式濾過機を用いて濾過し、濾液を採取した。この濾液は食品に旨味を付与するための調味料として優れていた。さらに、この

濾液をスプレードライしたところ粉末状の調味料が得られた。得られた調味料の1.2%溶液を調製し、その旨味を5名のパネラーにより検討した結果、本発明調味料は植物性蛋白質加水分解物単独の場合に比べてその旨味が格段に向上していた。

【0023】

【発明の効果】本発明の焼酎残渣の精製濃縮物は、長期間保存しても何ら腐敗、悪臭を生じず、食品に旨味を付与するための調味料として有用である。

フロントページの続き

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